

# Geographical Service:

## A compass for the Web of Data

Gianluca Correndo, Manuel Salvadores,  
Yang Yang, Nicholas Gibbins, Nigel Shadbolt



[geoservice.psi.enakting.org](http://geoservice.psi.enakting.org)  
[www.enakting.org](http://www.enakting.org)

- Most PSI data sets published so far have at least one geographical dimension:
  - Different granularity (unitary authorities, wards, constituencies, ...)
- Need to align geographical entities from various sources to an authoritative knowledge base:
  - Once aligned need to exploit such a reference.
  - Qualitative Spatial Relations can be used then to retrieve related entities (e.g. all sub-regions of a region)
  - Potential backlinking exploitation of such containments.

# Motivation

## Eric Illsley for Barnsley Central from 2001-06-07 to 2005-04-11

HTML document for URI: <http://parliament.psi.enakting.org/id/member/989>  
other formats: [RDF](#) [NTriples](#)

|   |   |
|---|---|
| <a href="http://parliament.psi.enakting.org/def/towhy">http://parliament.psi.enakting.org/def/towhy</a>                                   | general_election_standing   |
| <a href="#">type</a>  | <a href="#">MP Identity</a>   |
| <a href="http://parliament.psi.enakting.org/def/fromdate">http://parliament.psi.enakting.org/def/fromdate</a>                             | 2001-06-07  |
| <a href="http://parliament.psi.enakting.org/def/isParliamentIdentityOf">http://parliament.psi.enakting.org/def/isParliamentIdentityOf</a> | <a href="http://parliament.psi.enakting.org/id/person/10305">http://parliament.psi.enakting.org/id/person/10305</a> |
| <a href="http://parliament.psi.enakting.org/def/party">http://parliament.psi.enakting.org/def/party</a>                                   | Lab   |
| <a href="http://purl.org/dc/terms/coverage">http://purl.org/dc/terms/coverage</a>   | <a href="#">barnsley central</a>  |
| <a href="http://parliament.psi.enakting.org/def/fromwhy">http://parliament.psi.enakting.org/def/fromwhy</a>                               | general_election  |
| <a href="http://parliament.psi.enakting.org/def/hasIdentityStatus">http://parliament.psi.enakting.org/def/hasIdentityStatus</a>           | <a href="#">Inactive Status - used for partitioning identities</a>  |
| <a href="#">label</a>   | Eric Illsley for Barnsley Central from 2001-06-07 to 2005-04-11   |
| <a href="http://purl.org/dc/terms/identifier">http://purl.org/dc/terms/identifier</a>   |   |
| <a href="http://parliament.psi.enakting.org/def/hasIdentityStatus">http://parliament.psi.enakting.org/def/hasIdentityStatus</a>           |   |

## 6300 Burglary, Lincolnshire, 2001/02

HTML document for URI: [http://crime.psi.enakting.org/id/ds1\\_18\\_5](http://crime.psi.enakting.org/id/ds1_18_5)  
other formats: [RDF](#) [NTriples](#)

|                                 |   |
|---------------------------------|---|
| <a href="#">label</a>           | 6300 Burglary, Lincolnshire, 2001/02  |
| <a href="#">dataset</a>         | <a href="#">Recorded crime by offence group by police force area, English region and Wales, 2008/09</a> |
| <a href="#">type</a>            | <a href="#">Crime Data Item</a>   |
| <a href="#">has dimension</a>   | <a href="#">Burglary</a><br><a href="#">Lincolnshire</a><br><a href="#">2001/02</a>                     |
| <a href="#">value</a>           | 6300  |
| <a href="#">part of dataset</a> | <a href="#">Recorded crime by offence group by police force area, English region and Wales, 2008/09</a> |

- Administrative KB of Great Britain as Linked Data.
- Released by an authoritative entity - Ordnance Survey.
  - From European Regions (e.g. South-West England) to single parishes and constituencies
  - Spatial relationships.
- There is a concrete opportunity to exploit this knowledge and provide a geographical context to other datasets
- Connections between datasets can be acquired by using co-reference mediation services ([sameAs.org](http://sameAs.org))

GB Administrative  
Geography



+

co-reference  
mediation

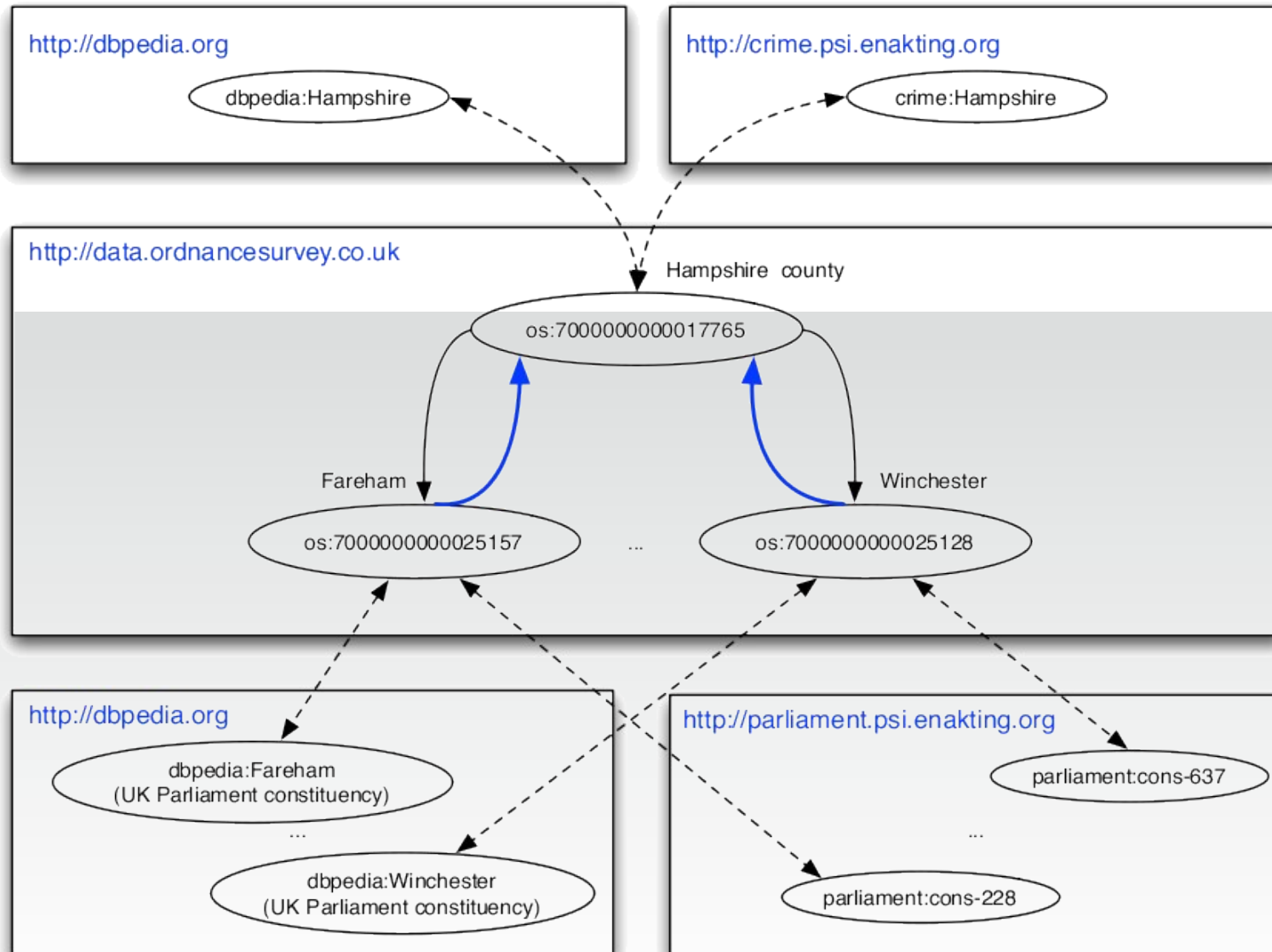
<sameAs>

=

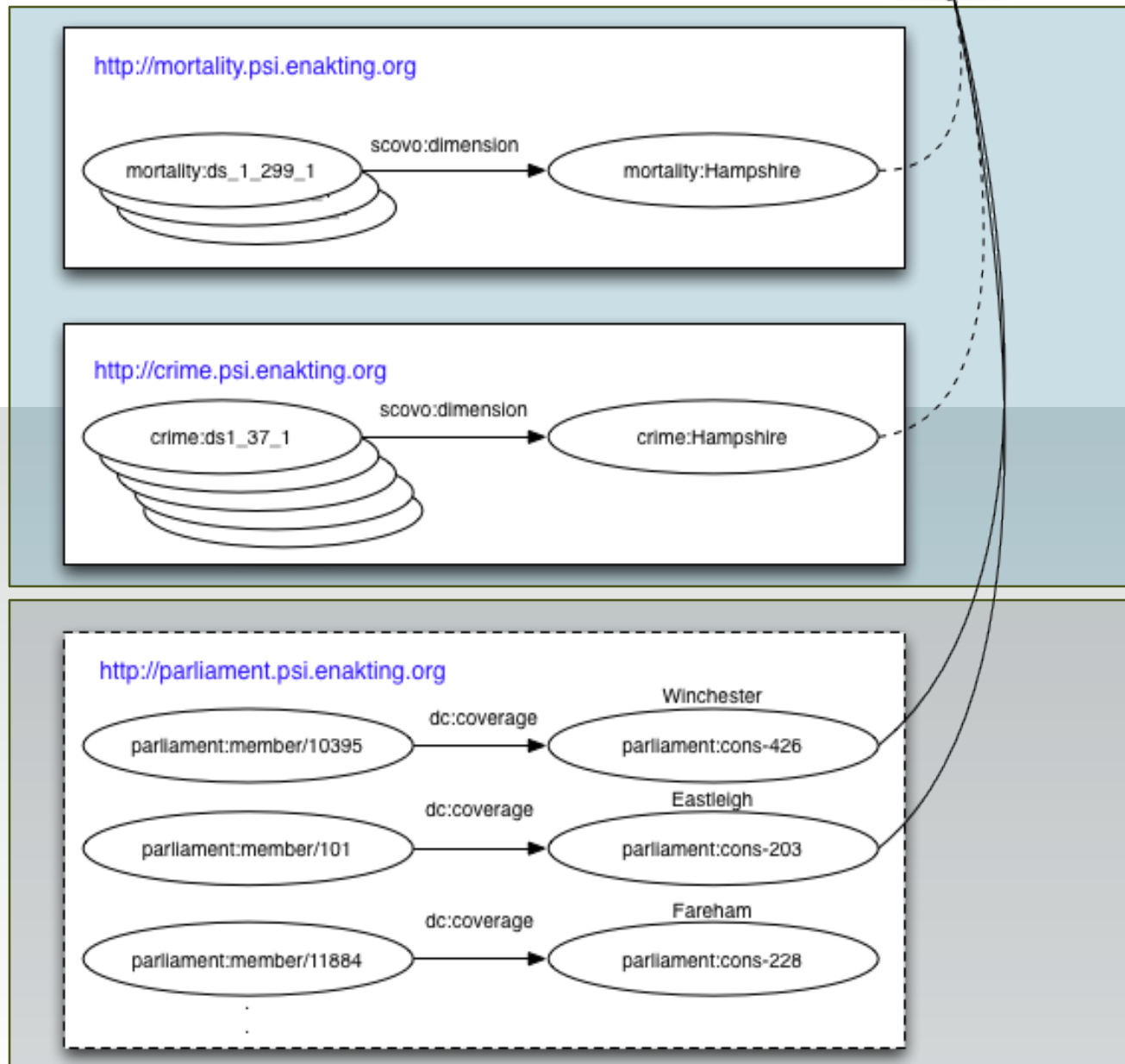
[geoservice.psi.enakting.org](http://geoservice.psi.enakting.org)



# Geographical service – the data



original links

Links with  
Geoservice  
inference

# Geographical service – the API

- `http://geoservice.psi.enakting.org/{command}/{dictionary}/{format}/{URI}`
  - `command` = **contains** or **container**
  - `dictionary` = one of {**dbpedia**, **os**, **geonames**, **statistics**, **geonames**, **enakting**, **opencyc**, **openlylocal**, **none**}
  - `format` = **rdf** or **text** or **turtle** or **json**
  - `URI` = input URI of the entity to make the containment closure



# http://geoservice.psi.enakting.org

## PSI Geographical Service

powered by EnAKTing, [EPSRC EP/G008493/1](#)



[geoservice.psi.enakting.org](http://geoservice.psi.enakting.org) is a service to discover geographical resources in the Web of Data querying containment relations. In order to use the service enter a Linked Data URI in the input text box and choose the target data set or "none" for retrieving all the results. This service is integrated with [sameAs.org](#) so as to increase the coverage of connectivity. Moreover, the service is also integrated with [backlinking service](#) in order to retrieve resources that link to the geographical resources retrieved.

  
 From what dataset? Ordnance Survey  
Contains

Explore some of the UK geographical entities in different data sets:

[\(EnAKTing\) Hampshire](#)  
[\(EnAKTing\) London](#)  
[\(Ordnance Survey\) Barnsley Central](#)  
[\(Openly Local\) Southampton](#)

## API Information

This service is a RESTful API, you can point your requests to:  
<http://geoservice.psi.enakting.org/{command}/{dictionary}/{format}/{URI}>

### command:

- **contains:** returns the entities contained in the input URI
- **container:** returns the entities that contains the input URI

### dictionary:

- **os:** URIs from Ordnance Survey
- **statistics:** from UK National Statistics
- **dbpedia:** from DBpedia

1. <http://openlylocal.com/id/wards/4925>
2. <http://openlylocal.com/id/wards/4929>
3. <http://openlylocal.com/id/wards/4937>
4. <http://openlylocal.com/id/wards/4924>
5. <http://openlylocal.com/id/wards/4931>
6. <http://openlylocal.com/id/wards/4928>
7. <http://openlylocal.com/id/wards/4936>
8. <http://openlylocal.com/id/wards/4927>
- 9.

# Evaluation

[backlinks.psi.enakting.org](https://backlinks.psi.enakting.org)

## Backlinks Geographical Service Integration **Disabled**

<http://backlinks.psi.enakting.org/resource/doc/http://dbpedia.org/resource/Hampshire>

PSI BackLinking Service for the Web of Data

powered by EnAKTing, [EPSRC EP/G008493/1](#)

<http://dbpedia.org/resource/Hampshire>

(sameAs) <http://data.ordnancesurvey.co.uk/id/7000000000017765>

Mortality Data Item (3)

Crime Data Item (11)

## Backlinks Geographical Service Integration **Enabled**

<http://backlinks.psi.enakting.org/resource/doc/http://dbpedia.org/resource/Hampshire?geo=enabled>

PSI BackLinking Service for the Web of Data

powered by EnAKTing, [EPSRC EP/G008493/1](#)

<http://dbpedia.org/resource/Hampshire>

Foundation School (102)

LA Nursery School (12)

Other Independent School (310)

Other Independent Special School (11)

## Tutorial (4)

### Energy Consumption (300)

Voluntary Aided School (210)

#### Higher Education Institutions (4)

Miscellaneous (20)

Pupil Referral Unit (50)

Music (4)

Training School (4)

Further Education (62)

School (6010)

Voluntary Controlled School (303)

[Community Special School](#) (168)

[EY Setting](#) (3248)

### Secure Units (4)

Independent School Approved for SEN Pupils (23)

Special College (12)

[CO2 Emission Statistic](#) (981)

Non-Maintained Special School (4)

Community School (1467)

Crime Data Item (11)

Population Statistic (4788)

[Mortality Data Item](#) (42)

<http://map.psi.enakting.org>

### Linked Data Resources

List of resources linked to [Hampshire County](#):

[Parliamentary Mandate \(224\)](#)

[CO2 Emission Statistic \(981\)](#)

[Crime Data Item \(11\)](#)

[Population Statistic \(4788\)](#)

[Mortality Data Item \(42\)](#)

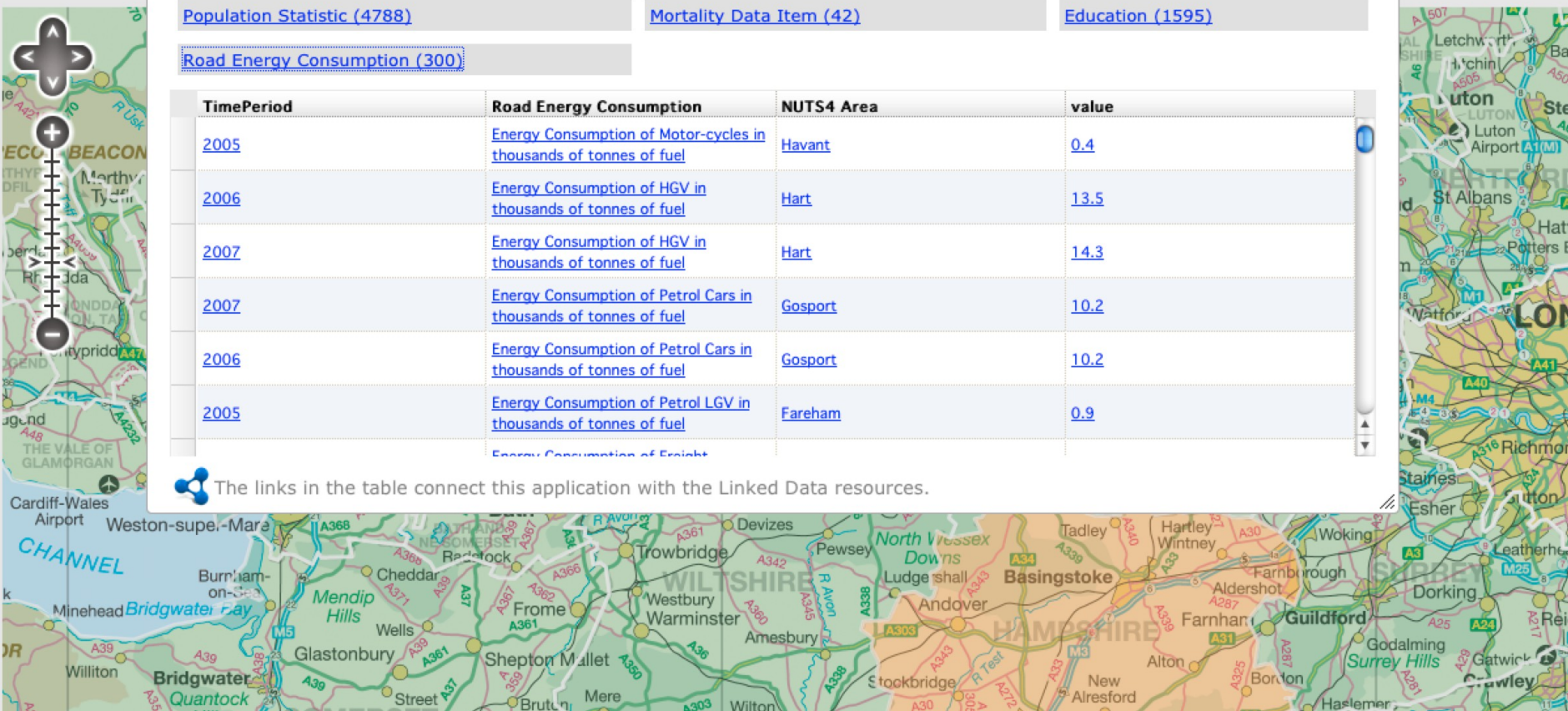
[Education \(1595\)](#)

[Road Energy Consumption \(300\)](#)

| TimePeriod           | Road Energy Consumption   | NUTS4 Area              | value                |
|----------------------|---|-------------------------|----------------------|
| <a href="#">2005</a> | <a href="#">Energy Consumption of Motor-cycles in thousands of tonnes of fuel</a> | <a href="#">Havant</a>  | <a href="#">0.4</a>  |
| <a href="#">2006</a> | <a href="#">Energy Consumption of HGV in thousands of tonnes of fuel</a>          | <a href="#">Hart</a>    | <a href="#">13.5</a> |
| <a href="#">2007</a> | <a href="#">Energy Consumption of HGV in thousands of tonnes of fuel</a>          | <a href="#">Hart</a>    | <a href="#">14.3</a> |
| <a href="#">2007</a> | <a href="#">Energy Consumption of Petrol Cars in thousands of tonnes of fuel</a>  | <a href="#">Gosport</a> | <a href="#">10.2</a> |
| <a href="#">2006</a> | <a href="#">Energy Consumption of Petrol Cars in thousands of tonnes of fuel</a>  | <a href="#">Gosport</a> | <a href="#">10.2</a> |
| <a href="#">2005</a> | <a href="#">Energy Consumption of Petrol LGV in thousands of tonnes of fuel</a>   | <a href="#">Fareham</a> | <a href="#">0.9</a>  |
|                      | <a href="#">Energy Consumption of Freight</a>                                     |                         |                      |



The links in the table connect this application with the Linked Data resources.



Thanks,  
questions ...